UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,773	06/23/2006	Tomofumi Yamanashi	P30147	1328

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EXAMINER
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ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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	Application No.	Applicant(s)
	10/596,773	YAMANASHI ET AL.
Office Action Summary	Examiner	Art Unit
	MICHAEL C. COLUCCI	2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2008*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-15* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments, see Remarks page 8, filed 10/28/2008, with respect to the

rejection(s) of claim(s) 10-15 under 35 USC 103(a) have been fully considered and are

persuasive. Therefore, the rejection has been withdrawn. However, upon further

consideration, a new ground(s) of rejection is made in view of Abe et al. US 6990443 B1

(hereinafter Abe). Abe teaches codebook vector quantization and distance calculation

based on characteristic vectors in order to change the classification of a signal into

voice, music, noise, etc. in order to find a best match, wherein various forms of distance

calculation are well known in the art.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 12 and 13 are rejected under 35 U.S.C. 101 because:

 Claims 12 and 13 do not fall within one of the four statutory categories of

invention. Supreme Court precedent[1] and recent Federal Circuit decisions[2] indicate

that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory

category (such as a particular apparatus), or (2) transform underlying subject matter

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[1] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk
v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).
[2] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

(such as an article or material) to a different state or thing. While the instant claim(s)

recite a series of steps or acts to be performed, the claim(s) neither transform

underlying subject matter nor positively tie to another statutory category that

accomplishes the claimed method steps, and therefore do not qualify as a statutory

process.

Claims 12 and 13 recite purely mental steps and would not qualify as a statutory

process. In order to qualify as a statutory process, the method claim should positively

recite the other statutory class to which it is tied (i.e. apparatus, device, product, etc.).

For example, the method steps of claim 12 and 13 appear to recite mental steps such

as "voice and musical tone coding" and do not identify an apparatus that performs the

recited method steps, such as *the coding procedure executed by* as described in the

specification (present invention [0153]).

Claims 14 and 15 are rejected under 35 U.S.C. 101 because:

The claimed invention is directed to non-statutory subject matter.

As per the claims, the language "readable medium"

do not transform the claimed subject matter into statutory subject matter. The present

invention discloses *a propagation medium such as a radio wave* (present invention

[0290]).

NOTE:

Claims that recite nothing but the <u>physical characteristics of a form of energy</u>,

such as a frequency, voltage, or the strength of a magnetic field, <u>define energy</u> or

magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S.

(15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded

with functional descriptive material falls within any of the categories of patentable

subject matter set forth in § 101.

First, a claimed signal is clearly not a "process" under § 101 because it is not a

series of steps. The other three § 101 classes of machine, compositions of matter and

manufactures "relate to structural entities and can be grouped as 'product' claims in

order to contrast them with process claims." 1 D. Chisum, Patents § 1.02 (1994). The

three product classes have traditionally required physical structure or material.

"The term machine includes every mechanical device or combination of

mechanical device or combination of mechanical powers and devices to perform some

function and produce a certain effect or result." Corning v. Burden, 56 U.S. (15 How.)

252, 267 (1854). A modern definition of machine would no doubt include electronic

devices which perform functions. Indeed, devices such as flip-flops and computers are

referred to in computer science as sequential machines. A claimed signal has no

physical structure, does not itself perform any useful, concrete and tangible result and, thus, does not fit within the definition of a machine.

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A "composition of matter" "covers all compositions of two or more substances and includes all composite articles, whether they be results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids." Shell Development Co. v. Watson, 149 F. Supp. 279, 280, 113 USPQ 265, 266 (D.D.C. 1957), aff'd, 252 F.2d 861, 116 USPQ 428 (D.C. Cir. 1958). A claimed signal is not matter, but a form of energy, and therefore is not a composition of matter.

The Supreme Court has read the term "manufacture" in accordance with its dictionary definition to mean "the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." Diamond v. Chakrabarty, 447 U.S. 303, 308, 206 USPQ 193, 196-97 (1980) (quoting American Fruit Growers, Inc. v. Brogdex Co., 283 U.S. 1, 11, 8 USPQ 131, 133 (1931), which, in turn, quotes the Century Dictionary). Other courts have applied similar definitions. See American Disappearing Bed Co. v. Arnaelsteen, 182 F. 324, 325 (9th Cir. 1910), cert. denied, 220 U.S. 622 (1911). These definitions require physical substance, which a claimed signal does not have. Congress can be presumed to be aware of an administrative or judicial interpretation of a statute and to adopt that interpretation when it re-enacts a statute without change. Lorillard v. Pons, 434 U.S. 575, 580 (1978). Thus, Congress must be presumed to have been

aware of the interpretation of manufacture in American Fruit Growers when it passed

the 1952 Patent Act.

A manufacture is also defined as the residual class of product. 1 Chisum, §

1.02[3] (citing W. Robinson, The Law of Patents for Useful Inventions 270 (1890)).

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A product is a tangible physical article or object, some form of matter, which a

signal is not. That the other two product classes, machine and composition of matter,

require physical matter is evidence that a manufacture was also intended to require

physical matter. <u>A signal, a form of energy, does not fall within either of the two</u>

<u>definitions of manufacture</u>. Thus, a signal does not fall within one of the four statutory

classes of § 101.

On the other hand, from a technological standpoint, a signal encoded with

functional descriptive material is similar to a computer-readable memory encoded with

functional descriptive material, in that they both create a functional interrelationship with

a computer. In other words, a computer is able to execute the encoded functions,

regardless of whether the format is a disk or a signal.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akagiri US 5502789 A (hereinafter Akagiri) in view of Abe et al. US 6990443 B1 (hereinafter Abe).

Re claims 10, 12, and 14, Akagiri teaches a voice and musical tone coding apparatus comprising:

a quadrature transformation processing section that converts a voice and musical tone signal from a time component to a frequency component (Col. 5 lines 13-28);

an auditory masking characteristic value calculation section that finds an auditory masking characteristic value from said voice and musical tone signal (Col. 6 lines 3-17); and

a vector quantization section that, when one of said voice and musical tone signal frequency component and elements of [[said]] code vector is within an auditory masking area (Col. 1 line 54 – Col. 2 line 3, recognizes changes in noise/speech/silence based on masking) indicated by said auditory masking characteristic value, performs vector quantization changing a calculation method of a distance between said voice and musical tone signal frequency component and said elements of code vector based on said auditory masking characteristic value (Col. 6 lines 3-17)

However, Akagiri fails to teach voice and musical tone coding

vector quantization changing a calculation method of a distance between said voice and musical tone signal frequency component and said elements of code vector

Abe teaches the computation of distance, arithmetic operation for comparison compares the new characteristic vector $Y.sub.i$ and the VQ code book 8. Then, it retrieves the centroid showing the Mahalanobis distance closest to the characteristic vector $Y.sub.i$ and outputs the category represented by the centroid as the result of classification (changing sound or non-changing sound). The descriptor showing the result of classification is output from output terminal 55 of the vector quantizing section 5. Referring now to FIG. 7, the characteristic vector $X.sub.i$ of the i-th block to be classified is supplied to terminal 61 of the vector quantizing section 5. Then, the characteristic vector $X.sub.i$ of the i-th block is sent to section 62 for computation of distance, arithmetic operation for comparison, which is also a principal component of the vector quantizing section 5. The section 62 for computation of distance, arithmetic operation for comparison compares the characteristic vector $X.sub.i$ and the VQ code book 8. Then, it retrieves the centroid showing the Mahalanobis distance closest to the characteristic vector $X.sub.i$ and outputs the category represented by the centroid as the result of classification (voice, music, noise, environmental sound, etc.). The descriptor showing the result of classification is output from output terminal 63 of the vector quantizing section 5 (Abe Col. 14 line 50 – Col. 15 line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Akagiri to incorporate vector quantization changing a calculation method of a distance between said voice and musical tone signal frequency component and said elements of code vector as taught by Abe to allow for proper classification of a signal, wherein a change in distance will indicate whether a

signal is music relative to vector quantization from a codebook and vector characteristic

(Abe Col. 14 line 50 – Col. 15 line 6).

Re claims 11, 13, and 15, Akagiri teaches a voice and musical tone coding

apparatus comprising:

a quadrature transformation processing section that converts a voice and musical

tone signal from a time component to a frequency component (Col. 5 lines 13-28);

an auditory masking characteristic value calculation section that finds an auditory

masking characteristic value from said voice and musical tone signal (Col. 6 lines 3-17);

and

a vector quantization section that, when codes of said voice and musical tone

signal frequency component and elements of [[said]] code vector differ, and said voice

and musical tone signal frequency component and said elements of code vector are

outside an auditory masking area (Col. 1 line 54 – Col. 2 line 3, recognizes changes in

noise/speech/silence based on masking) indicated by said auditory masking

characteristic value, performs vector quantization changing a calculation method of a

distance between said voice and musical tone signal frequency component and said

elements of code vector based on said auditory masking characteristic value (Col. 6

lines 3-17)

However, Akagiri fails to teach voice and musical tone coding

vector quantization changing a calculation method of a distance between said

voice and musical tone signal frequency component and said elements of code vector

Abe teaches the computation of distance, arithmetic operation for comparison compares the new characteristic vector Y.sub.i and the VQ code book 8. Then, it retrieves the centroid showing the Mahalanobis distance closest to the characteristic vector Y.sub.i and outputs the category represented by the centroid as the result of classification (changing sound or non-changing sound). The descriptor showing the result of classification is output from output terminal 55 of the vector quantizing section 5. Referring now to FIG. 7, the characteristic vector X.sub.i of the i-th block to be classified is supplied to terminal 61 of the vector quantizing section 5. Then, the characteristic vector X.sub.i of the i-th block is sent to section 62 for computation of distance, arithmetic operation for comparison, which is also a principal component of the vector quantizing section 5. The section 62 for computation of distance, arithmetic operation for comparison compares the characteristic vector X.sub.i and the VQ code book 8. Then, it retrieves the centroid showing the Mahalanobis distance closest to the characteristic vector X.sub.i and outputs the category represented by the centroid as the result of classification (voice, music, noise, environmental sound, etc.). The descriptor showing the result of classification is output from output terminal 63 of the vector quantizing section 5 (Abe Col. 14 line 50 – Col. 15 line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Akagiri to incorporate vector quantization changing a calculation method of a distance between said voice and musical tone signal frequency component and said elements of code vector as taught by Abe to allow for proper classification of a signal, wherein a change in distance will indicate whether a

signal is music relative to vector quantization from a codebook and vector characteristic

(Abe Col. 14 line 50 – Col. 15 line 6).

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. US 5819212 A, US 20070179780 A1, US 5323486 A.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Michael C. Colucci whose telephone number is (571)-

270-1847. The examiner can normally be reached on 9:30 am - 6:00 pm, Monday-

Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Richemond Dorvil can be reached on (571)-272-7602. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

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